APPENDIX C

GUIDELINES FOR CMP TRAFFIC IMPACT ANALYSIS REPORTS IN SAN BERNARDINO COUNTY

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These guidelines describe the key elements required for preparing Traffic Impact Analysis Reports (TIA Reports) for the Congestion Management Program (CMP) in San Bernardino County. The purpose of these guidelines is to achieve a common approach to preparation of TIA Reports by all jurisdictions, thereby reducing inconsistencies and disagreements on how such studies should be performed.

TIA Reports shall be prepared by local jurisdictions when local criteria and thresholds indicate they are necessary. However, TIA Reports must be prepared to satisfy CMP requirements when a proposed change in land use, development project, or at local discretion, a group of projects are forecast to equal or exceed the CMP threshold of 250 two-way peak hour trips (1,000 for retail land uses or a weighted average, for mixed uses) generated, based on trip generation rates published for the applicable use or uses in the Institute of Transportation Engineers' Trip Generation or other CMA-approved data source. Pass-by trips shall not be considered in the threshold determination. However, industrial, warehousing and truck projects shall convert trucks to PCE's before applying the threshold.

Projects shall not be split to avoid the CMP requirements. If an additional phase of a project, when added to the preceding phases, causes the sum of the phases to exceed the threshold, the entire project must be analyzed as a unit. The analysis must be conducted when the phases are anticipated and should not wait for later phases, even if earlier phases alone would not exceed the threshold.

Locally determined criteria may be developed which are more stringent than those identified above. Individual development projects, parcels, or proposals in the same geographic vicinity that can reasonably be combined into a single project for analysis purposes which meets the threshold requirements for a TIA Report shall be analyzed as a single project.

TIA REVIEW

All TIA Reports shall be copied to the CMA. If a TIA Report is prepared by the local jurisdiction as stated above, and if the TIA Report determines that the project would add 80 or more 2-way peak-hour trips to a CMP arterial within another jurisdiction or 100 2-way peak-hour trips to a freeway, that jurisdiction (and Caltrans, if a state highway) shall be provided a copy of the TIA Report by the permitting jurisdiction. However, these criteria are not intended to determine when a local jurisdiction prepares a TIA Report.

It is the responsibility of the local jurisdiction to provide review copies of the TIA Report to the CMA and to potentially impacted jurisdictions so that review will occur in concert with the permitting jurisdiction's project review schedule, and prior to any approval or permitting activity. (Note: the transmittal letter shall indicate the agencies receiving the TIA report.) The period allotted for review shall be stipulated by the permitting jurisdiction but shall not be less than 15

working days from the date the CMA receives the report. To establish the date of receipt, it is encouraged the report be transmitted by certified mail. Should serious technical flaws be identified in the TIA Report such that the permitting jurisdiction chooses to recirculate the TIA Report, the recirculated document shall be reviewed no later than 10 working days from the date of receipt.

The reports focus on the potential impacts of land use decisions on the CMP system. These reports are used in conjunction with modeling for the CMP system to forecast transportation deficiencies in San Bernardino County. While there are unique aspects to many projects, the approach outlined here can be applied to the vast majority of projects. The preparer of the report is responsible for presenting all the relevant information that would be helpful in making transportation-related decisions. The guidelines presented here should be regarded as typical minimum requirements. They are not a substitute for exercising good planning and engineering judgment. Local agencies may wish to include additional requirements for traffic analysis beyond those for the CMP. Only the CMP requirements are addressed here; any requirements added by a jurisdiction apply only in that jurisdiction, unless otherwise agreed.

Other information relating to the preparation of a TIA Report may be found in Chapter 4 of the Congestion Management Program for San Bernardino County. Preparers of TIA Reports should consult the CMP for additional detail.

Implications of CMP Review

The authority to make land use decisions rests with local jurisdictions. A Land Use/Transportation Analysis Program consistent with the CMP guidelines has the potential to influence local land use decisions by requiring full evaluation and disclosure of impacts to the regional transportation system, regardless of jurisdictional boundaries. Local jurisdictions are required to maintain the adopted standards on the CMP system, so it is essential that local jurisdictions consider the necessary actions and costs required to mitigate impacts that result from local land use decisions.

The success of the program relies on consistency with applicable regional plans, and the cooperative efforts of local jurisdictions, Caltrans, and the CMA. If an integration of land use decisions and the provision of transportation facilities is not accomplished as required by the program, a jurisdiction which fails to mitigate deficiencies on the CMP system caused by its land use decisions will face withholding of its Proposition 111 gas tax increment funds.

Content of the Traffic Impact Analysis Report (TIA)

The TIA Report may be contained within other similar documents (e.g. an EIR prepared under CEQA), or it may be an independent document. The intent is to address all CMP concerns without duplication of other work. In some jurisdictions, the TIA Report may be prepared by the developer or developer's consultant. In other jurisdictions, the TIA Report may be prepared by the jurisdiction or jurisdiction's consultant. In either case, it is in the interest of all parties that the participants fully understand and come to agreement on the assumptions and methodology prior to conducting the actual analysis. This is particularly important when considering using assumptions that vary from the norm. The local jurisdiction may request a meeting with the developer and/or preparer of the TIA Report to discuss the methodology prior to the initiation of work on the analysis. A meeting with the CMA is

also encouraged to address issues associated with large or extraordinary projects.

The following outline and commentary represents the recommended structure for the TIA Report.

I. Introduction.

Should set the stage for the analysis, providing background information necessary for the unfamiliar reader to understand the magnitude of the project, location of the project, and special characteristics.

A. Project, general plan or specific plan description.

If this is already included in another part of a more comprehensive document, that is acceptable. The description must include project size by land use type, location of project, approximate location of proposed access points to the local and regional roadway system, and movements from adjacent streets allowed into and out of the project. This should be shown in a site diagram. Special characteristics of the site, such as unusual daily or seasonal peaking characteristics or heavy involvement of truck traffic, should be mentioned.

B. Analysis methodology.

Provide a general description (overview) of the process used to analyze the project. Analysis years should be specified and the approach to the modeling/traffic forecasting process should be explained. The sources of information should be identified. The study area and method for level of service analysis for the various roadway types should be identified. At a minimum, the study area must include all freeway links with 100 or more peak-hour project trips (two-way) and other CMP roadways with 80 or more peak-hour project trips (two-way). The study area does not end with a city or county boundary. The study area is defined by the magnitude of project trips alone. In most cases, the analysis need not extend more than five miles beyond the project site, even if there are more than 80 project trips on an arterial and 100 project trips on a freeway. However, analysis of projects in isolated areas with few access routes should be continued until the 100 or 80-trip threshold is met. Within the defined study area, all "key intersections," as listed in the most current CMP, must be analyzed. Key intersections represent intersections of CMP roadways plus those additional intersections recognized by local jurisdictions and/or SANBAG to be important to mobility on CMP roadways may be considered key intersections. At a minimum, key intersections will include signalized intersections operating at LOS D or below. The distribution of traffic must be shown for all roadways on which project trips occur (except those for internal circulation), whether or not they are on the CMP network.

The analysis of traffic operations and level of service is to be provided for the following conditions and is to include an assessment of traffic mitigation requirements for project opening day and future conditions.

1. Existing conditions - conditions, at the time of TIA preparation, without the inclusion of the project generated trips. Existing deficiencies should be identified, but mitigation analysis is not required. The existing conditions analysis must include the full project impact area as defined above.

2. Project full generation conditions - the conditions on the opening day of the project, first excluding the project traffic, and then including the project traffic assuming the full trip generation impact of the site. If it is deemed more

appropriate because of the nature of the project, another intermediate scenario may be included to focus on the access requirements and/or immediate area surrounding the project, subject to a request by the local jurisdiction.

3. Future conditions - the conditions for two model forecast year scenarios: 1) excluding the project traffic, and 2) including the project traffic. Full mitigation analysis is to be performed for future conditions. In addition, a staging analysis of mitigations may be required for large projects constructed over a long time period. The need for a staging analysis will be determined by the local jurisdiction.

The analysis of the project full generation and future condition shall be based on, at a minimum, the PM peak-hour of the adjacent street traffic. An analysis of the AM peak-hour of the adjacent street traffic is also required for developments containing residential land uses, and may be required for other types of development at local discretion. Analysis may be required for peak-hours other than the AM and PM peak for some land uses. This determination will be made by the local jurisdiction. The peak traffic generation hour of the development, if different from peak AM and PM hours, must also be identified, and the total vehicle trips during the peak-hour of the generator must be estimated. This will facilitate a decision regarding the need to evaluate time periods other than the peak-hours of the adjacent streets.

II. Existing conditions.

A. Existing roadway system.

Provide a map and brief written description of the roadway network. The number and type of lanes on freeways, principal arterials, and other impacted roadways should be identified. Signalized intersections and plans for signalization should be identified. The existing number of lanes at key CMP intersections should be clearly identified on a graphic or in conjunction with the level of service analysis output. Maps of the CMP network are available in the Congestion Management Program documentation, available from the CMA. Also describe the relevant portions of the future network as specified with officially approved funding sources.

B. Existing volumes.

Existing average weekday daily traffic (AWDT) should be identified for the CMP links in the study area. Historic volume growth trends in the study area should be shown. Consult the local jurisdiction, Caltrans, and San Bernardino County for additional information.

C. Existing levels of service.

A level of service analysis must be conducted on all existing segments and intersections on the CMP network potentially impacted by the project or plan (as defined by the thresholds in Section I. B). Urban segments (i.e., segments on roadways that are generally signalized with spacing less than 2 miles) do not require segment analysis. Segment requirements can normally be determined by the analysis of lane requirements at intersections. Freeway mainline must be analyzed, and ramp/weaving analysis may be required at local discretion, if a ramp or weaving problem is anticipated. Chapter 2 of the CMP presents the

acceptable LOS methodologies, based on the 2000 Highway Capacity Manual. Several software packages are available for conducting LOS analysis for signalized intersections, freeways, and other types of roadways. The software package and version used must be identified. Normally, the existing LOS analysis for intersections will be run using optimized signal timing, since the future analysis will normally need to be run using optimized timing. Signal timing optimization should consider pedestrian safety and signal coordination requirements. Minimum times should be no less than 10 seconds.

Saturation flow rates are considered as average field measured saturation flow rates, and in no case shall the adjusted saturation flow rates of the 2001 Highway Capacity Software be allowed to go lower than the specified saturation flow rates listed on page C-13, when field data are not available. However, there shall be no restriction on minimum saturation flow rates if actual saturation flow rates are available.

Default lost time is two seconds per phase, and a clearance signal time of three seconds. Without local data to show otherwise, a peak-hour factor of 0.95 may be assumed for existing and full generation scenarios. Variations from these values must be documented and justified. LOS analyses should be field-verified so that the results are reasonably consistent with observation and errors in the analysis are more likely to be caught. A brief commentary on existing problem areas must be included in this section, bringing existing problems to the attention of the readers.

Only future scenarios with project require that traffic operational problems be mitigated to provide LOS E or better operation. If the lead agency or an affected adjacent jurisdiction requires mitigation to a higher LOS, this takes precedence over the CMP requirements.

D. Related general plan issues.

The relationship to the general plan may be identified. This section should provide general background information from the Traffic Circulation Element of the General Plan, including plans for the ultimate number of lanes, new roadways planned for the future, and other information that provides a context for how the proposed project interrelates with the future planned transportation system.

III. Future conditions.

A. Traffic forecasts.

One of the primary products of the TIA is the comparison of future traffic conditions with and without the project. The primary forecasts will be for the CMP forecast year (consult the CMA for the most currently applicable forecast years. If a project is phased over a development period past the CMP forecast year, a buildout forecast with forecast background traffic must also be provided. There are two components of the forecast that need to be considered: background traffic and project traffic. Acceptable methodologies for these forecasts are described below:

Project Traffic Forecasts.

Two basic alternatives are available for forecasting project traffic:

1. Manual method - Generate project trips using rates from the ITE Trip Generation report. Distribute and assign

the trips based on the location of the project relative to the remainder of the urban area and on the type of land use. Rather than relying on pure judgment to develop the
distribution of project traffic, the future year CMP model select zone needs to be obtained from SCAG to determine the distribution pattern. The percentage distribution should be reasonably related to the location of and the number of trips generated by zones surrounding the project. Computer-assisted trip distribution and assignment methods may be used as long as they reasonably represent the travel characteristics of the area in which the project is located. It should be noted that the model does not forecast project trucks. Therefore distribution needs to be made in a reasonable manner.

2. Use of local model - Create a zone or zones that represent the project (if not already contained in the local model). The CMP model may be used if new zones are created to represent the project (it is unlikely that the CMP model will already have zones small enough to represent the project). The zone or zones should include the exact representation of driveway locations with centroid connectors. It is important that the driveway representations be exact to produce acceptable turning movement volumes. Some adjustments to the turning movement volumes may be needed, depending on the adequacy of this representation. (See page C-15, Item 5).)

The above methodologies may produce different results, both in the generation of trips and the distribution of trips. However, both methods will have application, depending on the jurisdiction and on the type and size of project. It should be noted that a model select zone run shall be used for distribution and ITE trip generation rates for project trips.
Background Traffic Forecasts.

Background traffic refers to all traffic other than the traffic associated with the project itself. The background traffic shall include intersection turning movement and segment truck volumes by classification (converted to PCE's) as shown on page C-13 on arterial streets, interchange ramps and mainline freeway lanes. Future scenarios shall use the truck model (converted to PCEs) or 150 percent of the existing truck volume for arterials and freeway ramps and 160 percent for mainline freeway lanes in a special generator area such as (just east of I-15, just east of Citrus Avenue, just north of San Bernardino Avenue and just south of Jurupa Avenue) found in the City of Fontana..

Several alternatives for forecasting background traffic are:

1. For project full generation analysis - Use accepted growth rates provided by the jurisdictions in which the analysis is to take place. Each jurisdiction's growth rates should be used for intersections and segments within that jurisdiction. A table of growth rates may be available from the jurisdictions.

2. For horizon year - The traffic passenger vehicle and truck classification (in PCEs) models will provide the needed forecasts and if requested, passenger vehicle background plus project forecasts.

Local models may also be used to generate intersection and segment forecasts, if a traffic refinement process is properly applied to maximize the quality and reasonableness of the forecasts. Alternatively, the CMP model may be used to generate growth factors by subarea, which may be applied to existing intersection and segment volumes. Ideally, cities and/or the County should establish the background forecasts annually for use by project applicants. Project applicants may obtain the background forecasts from the city/county without having to produce new forecasts. This approach is intended to minimize conflict and debate over the forecasts provided, as would occur if each applicant developed a completely new set of background forecasts. Until the city/county is in a position to produce these forecasts on a routine basis, they may wish to use the results of the background forecasts from prior acceptable TIA Reports as the basis for background forecasts for other TIA Reports. The separate forecasting of background traffic by each TIA Report preparer is redundant, will only create conflict among reports, and should be avoided by the city/county providing an acceptable background forecast for use by all TIA Report preparers. The availability of such forecasts should be established before initiating the preparation of a TIA Report. If the CMP model is being used as the basis for the forecast, assume that the project is not included in the CMP model forecast (unless it can be definitively proven otherwise). If a local model is being used, the background traffic will be derived by subtracting the project traffic from the forecast where the project is already represented in the model. Where the project is not represented in the model, the background traffic can be directly derived from the model (with appropriate refinement to maintain quality and reasonableness of the forecasts).

A Note on Methodology for General Plans and Specific Plans:

In the case of analysis of general plan revisions/updates or specific plans, the same approach is applied as above. However, the "project" to be analyzed shall consist of the proposed land use. However, for threshold determination use the difference between the previously approved general plan and the proposed revision to the general plan. Unless otherwise agreed by the local jurisdiction, the analysis must assume the maximum intensity of land uses allowed (i.e., worst case) on the parcels to which the revision applies. All new specific plans must be analyzed based on worst case assumptions. Although general plans may not identify specific access locations, the analysis must assume access locations that are reasonable, based on the location and size of the plan.

B. Traffic added by project, general plan revision/update, or specific plan.

The methods for generating and distributing project trips must be consistent with the appropriate methodology listed above. The total number of trips generated by the project must be specified by land use. The source of the trip generation rates must be documented. Any assumed reductions in trip generation rates, such as internal trips, and transit/TDM reductions must be

documented. Pass-by trips may be allowed only for retail uses and fast-food restaurants. The pass-by and internal trip percentages and methodology must be consistent with the estimates and methodology contained in the latest ITE Trip Generation handbook. The internal trip percentage must be justified by having a mixed-use development of sufficient size. In special cases, larger reductions may be allowed; but these must be documented and justified. Reductions for transit or TDM must be accompanied by an explanation of how the strategies will actually be implemented and may require a monitoring program. Project trips (inbound and outbound) must be identified on a graphic map for both the peak hour or hours being studied. Industrial and warehouse truck uses must also show the estimated number and distribution of truck trips (in PCE's) for the same hours. Appendix I contains guidelines for trip generation rates and truck percentages for industrial and warehouse land uses. Appendix I indicates trip rates to be used from either the latest edition of ITE's *Trip Generation* report or from the City of Fontana *Truck Trip Generation Study*, dated August 2003, depending on type of industrial or warehouse use. Trip generation rates for common carriers such as Yellow Freight, Roadway or Swift shall be determined using the latest edition of ITE's *Trip Generation* report or a site specific study approved by the local jurisdiction.

C. Transit and TDM considerations.

Transit and travel demand management strategies are a consideration in many development projects. Requirements within each jurisdiction are contained in the local TDM ordinance, to be adopted by each local jurisdiction as part of the CMP requirements. Examples of items to include are location of transit stops in relationship to the proposed project, designation of ridesharing coordinator, posting of information on transit routes and ridesharing information, provision of transit passes, etc..

D. Traffic model forecasts.

Provide a map showing link volumes by direction. All CMP arterial links with 80 or more peak-hour project trips (two-way) and freeway links with 100 or more peak-hour project trips (two-way) must be shown. The factor to derive a peak-hour from the three-hour AM peak period is 0.38. The factor to derive a peak-hour from the four-hour PM peak is 0.28. All model forecasts shall be post processed in order to be used.

E. Future levels of service.

Compute levels of service for CMP segments and intersections based on the procedures in the 2000 Highway Capacity Manual and subsequent updates. Refer to the procedures adopted in Chapter 2 of the CMP and the assumptions specified in section II.C of this appendix. Copies of the volumes, intersection geometry, capacity analysis worksheets, and all relevant assumptions must be included as appendices to the TIA Report. It should be noted that the v/c ratio and implied level of service that can be output by travel demand models are different from the level of service analysis prescribed in this section. The capacities used in the

model are not typically the same capacities as used in the capacity analysis.

Left turn, through and right turn lane queuing analysis is highly desirable to validate an intersection's LOS. This more detailed analysis is meant to ensure the various movements do not overflow and impede adjacent movements, and is left to the discretion of the local agency.

F. Description of projected level of service problems.

Identify resulting levels of service for intersections and segments, as appropriate, on a map for applicable peak-hours. Describe in the text the nature of expected level of service problems. Describe any other impacts that the project may also have on the CMP roadway network, particularly access requirements.

G. Project contribution to total new volumes (forecast minus existing) on analyzed links.

Compute the ratio of traffic generated by the proposed development to the total new traffic (including project traffic) generated between the existing condition and forecast year for each analyzed link or intersection. The purpose of this calculation is to identify the proportion of volume increase that can be attributed to the proposed project. This will be a necessary component of any deficiency plans prepared under the CMP at a later date. The calculations are to be conducted for all applicable peak-hours. The results may be shown on a map or in a table by percentages to the nearest tenth of a percent.

IV. Project mitigation.

The mitigation of project impacts is designed to identify potential level of service problems and to address them before they actually occur. This will also provide a framework for negotiations between the local jurisdiction and the project developer. The CMA will not be involved in these negotiations unless requested by a local jurisdiction. Impacts beyond the boundaries of the jurisdiction must be identified in the same fashion as impacts within the jurisdictional boundary. Impacted local agencies outside the boundary will be provided an opportunity for review of the TIA Report. Negotiations with these outside jurisdictions and with Caltrans is a possible outcome, depending on the magnitude and nature of the impacts. For the CMP, the mitigations must bring the roadway into conformance with the LOS standards established for the CMP. However, local agencies may require conformance to higher standards, and these must be considered in consultation with the local jurisdiction. Measures to address local needs that are independent from the CMP network should be included in the TIA Report for continuity purposes. Consult the local jurisdiction to determine requirements which may be beyond the requirements of the CMP. The information required in this part of the TIA Report is described below.

A. Other transportation improvements already programmed and fully funded (should be assumed in forecast).

B. Roadway improvements needed to maintain CMP level of service standard.

These should include an evaluation of intersection turn lanes, signalization, signal coordination, and link lane additions, at a minimum. If a freeway is involved, lane requirements and ramp treatments to solve level of service deficiencies must be examined. Prior studies on the same sections may be furnished to the preparer of the TIA, and such studies may be referenced if they do, in fact, provide the necessary mitigation for the proposed project. However, the calculation of percentage of contribution of the project to the growth in traffic must still be provided for the appropriate peak-hours, as described earlier. If the physical or environmental constraints make mitigation unlikely, then the contribution may be used to improve level of service elsewhere on the system or another location that would relieve the impact. The point of referencing a previously conducted study is to avoid unnecessary duplication of effort on the same sections of roadway. Copies of previously conducted relevant studies in the area may be obtained from the local jurisdictions or the CMA, including any plans resulting from the annual modeling runs for the CMP.

C. Other improvements needed to maintain the LOS standard.

In some cases, additional transit and TDM strategies beyond what was in the original assumptions may be necessary to provide an adequate mitigation. These must be described and the method for implementation must be discussed.

D. Level of service with improvements.

The level of service with improvements must be computed and shown on a map or table along with the traffic level of service without improvements. Delay values, freeway volume/capacity ratios, or other measures of level of service must be included in the results (could be in an appendix) along with the letter designation.

E. Cost estimates.

The costs of mitigating deficiencies must be estimated for deficiencies that occur either within or outside the boundaries of the jurisdiction. The costs must be identified separately for each jurisdiction and for Caltrans roadways. Prior studies and cost estimates by SANBAG, Caltrans and other jurisdictions may be referenced, or the Preliminary Construction Cost Estimates provided in Appendix G may be used. Used together with the analysis conducted in Section III.G, this will provide an approximation of project contribution to the needed improvements. This estimate is prepared for discussion purposes with the local jurisdiction and with neighboring jurisdictions and Caltrans. It does not imply any legal responsibility or formula for contributions to mitigations. If a mitigation is identified as necessary to bring a deficiency into conformance with the level of service standard, but physical or environmental constraints make the improvement impractical, an equivalent contribution should be considered to improve the LOS elsewhere on the system or another location providing direct relief.

F. Relationship to other elements.

While the measures required to address air quality problems are not required for the TIA Report, they may be required as part of a CEQA review. The TIA Report may be integrated with environmental documents prepared for CEQA requirements. This is at the discretion of the local jurisdiction.

V. Conclusions and recommendations.

A. Summary of proposed mitigations and costs.

Provide a summary of the impacts, proposed mitigations, and the costs of the mitigations. A cost estimate for the proposed mitigations must be included. Generalized unit costs will be available from either Caltrans, the local jurisdiction, or Appendix G. The source of the unit cost estimates used must be specified in the TIA Report.

B. Other recommendations.

List any other recommendations that should be brought to the attention of the local jurisdiction, the CMA, or Caltrans. This may include anticipated problems beyond the forecast year or on portions of the network not analyzed.

Summary List of Typical Figures and Tables to Be Included in a TIA Report:

- Project location and 5 mile limit study area (map)
- Project size by land use (table)
- Trips generated by land use for AM and PM weekday peak-hours of adjacent street traffic and for daily traffic inbound and outbound (table) and other applicable peak-hours
- List of other planned transportation improvements affecting the project
- Existing intersection and link volumes and levels of service (map)
- Distribution and assignment of project trips (map)
- Forecast traffic without project and with project for applicable peak-hours (map or table)
- Levels of service without project and with project (map or table)
- Improvements required to mitigate project various scenario impacts (map and/or table)
- Ratio of project traffic to new traffic (new traffic means the difference between existing and forecast) on analyzed links or intersections (map or table)
- Improvement costs by jurisdiction and for Caltrans roadways

SUMMARY OF ANALYSIS ASSUMPTIONS FOR THE CMP TRAFFIC IMPACT ANALYSIS GUIDELINES

Level of Service Analysis Procedures and Assumptions

Intersections

Methodology- 2000 HCM operational analysis.

Assumptions- Optimized signal timing/phasing for future signal analysis, unless assumed to be in a coordinated system, in which case estimated actual cycle length is used. The maximum cycle length for a single signalized intersection or system should be 130 seconds.

- 10 second minimum phase time, including change interval.
- Average arrivals, unless a coordinated signal system dictates otherwise.
- Ideal lane width (12 feet).
- 2 second lost time/phase.
- "Required" solution if analysis by Webster.
- Exclusive right turn lane is assumed to exist if pavement is wide enough to permit a separate right turn, even if it is not striped. (Minimum 20' from curb line to lane stripe.)
- A full saturation flow rate can be assumed for an extra lane provided on the upstream of the intersection only if this lane also extends at least 600 ft downstream of the intersection (or to the next downstream intersection).
- PHF = 0.95 for future analysis.
- The lane utilization factor may also be set at 1.00 when the v/c ratio for the lane group approaches 1.0, as lanes tend to be more equally utilized in such situations.
- For light duty trucks (such as service vehicles, buses, RV's and dual rear wheels) use a PCE of 1.5. For medium duty trucks with 3 axles use a PCE of 2.0. For heavy duty trucks with 4 axles, use a PCE of 3.0.
- Industrial, warehousing and other Projects with high truck percentages should convert to PCE's before applying thresholds.

Saturation Flows

Case (i) When field saturation flow rates and any special intersection characteristics are not available, the following field adjusted saturation flow rates are recommended for analysis.

Existing and Opening Year Scenarios

- Exclusive thru: 1800 vphgpl
- Exclusive left: 1700 vphgpl
- Exclusive right: 1800 vphgpl
- Exclusive double left: 1600 vphgpl
- Exclusive triple left: 1500 vphgpl or less

Future Scenarios

- Exclusive thru: 1900 vphgpl

- Exclusive left: 1800 vphgpl
- Exclusive double left: 1700 vphgpl
- Exclusive right: 1900 vphgpl
- Exclusive double right: 1800 vphgpl

Exclusive triple left: 1600 vphgpl

Note: Existing field saturation flow rates should be used if they are available and any special traffic or geometric characteristics should also be taken into account if known to affect traffic flow.

Freeways

- Capacity of 2,300 vehicles/hour/lane (1600/hr/lane/HOV)
- Use Caltrans truck percentages (includes trucks, buses and RV's)
- Peak-hour factor of .98 for congested areas and .95 for less congested areas
- Directional distribution of 55% and 45%, if using non-directional volumes from Caltrans volume book
- Design speed of 70 mph
- Volumes used from Caltrans' annual volume book are assumed to be PM peak-hour. AM peak mainline volumes assumed as 90% of PM peak, if using Caltrans volume book

Stop Controlled Intersections

- 2000 HCM for 2-way and 4-way stops

Project-Related Assumptions

1) Use the latest ITE Trip Generation handbook for mixed use internal trip percentages. Higher percentages must be fully justified.

2) Pass by trips - Retail uses and fast food restaurants only
   - Use ITE procedures to estimate percentage
   - For analysis at entry points into site, driveway volume is not reduced (i.e., trip generation rate is still the same). Rather, trips are redistributed based on the assumed prevalent directions of pass-by trips (see recommended ITE procedure).

3) Reductions for transit or TDM are a maximum of 10% unless higher can be justified.

Other

1) If a new traffic generating development project (other than a single family residential unit) within a federally designated urbanized area abuts a state highway or abuts a highway that intersects a State highway within 500 feet of that intersection, the local jurisdiction in which the development occurs must notify Caltrans and the CMA.

2) The TIA procedures will be reviewed biannually. Forward comments to the CMA.

3) Industrial warehouse and truck projects may distribute only truck trips by hand. (Employee trip distribution shall be modeled.)

4) Intersections will be considered deficient (LOS "F") if the critical v/c ratio equals or exceeds 1.0, even if the level of service defined by the delay value is above the defined LOS standard.

5) All the computer-generated traffic forecasts need to be refined (post processed by using "B" turns software available through SCAG's Riverside Office or another approved methodolgy as found in the Federal Transportation Research Board Report 255. However, the post processing of turning movements is restricted to local models only.) for use in TIA Reports to provide the best estimate of future volumes possible.

6) The study threshold for a stand-alone movie theater is 250 2-way peak hour trips.